

REMARKS

This application has been carefully reviewed in light of the Office Action dated August 12, 2008. Claims 1 to 10 remain pending in the application. Claims 1, 2, 4, 5, 6, 7 and 10 have been amended. Claims 1, 5, 6 and 10 are the independent claims herein. Reconsideration and further examination are respectfully requested.

Claims 1, 2, 4, 6 and 7 were rejected under 35 U.S.C. § 102(b) over U.S. Patent No. 5,961,616 (Wakasugi), Claims 3, 5, 8 and 10 were rejected under 35 U.S.C. § 103(a) over Wakasugi in view of U.S. Patent No. 5,818,603 (Motoyama), and Claim 9 was rejected under § 103(a) over Wakasugi in view of U.S. Patent No. 6,175,603 (Chapman). Reconsideration and withdrawal of the rejections are respectfully requested.

The present invention relates to an interface apparatus, to which information is input from an external apparatus according to a predetermined protocol which does not continuously transmit the same information. In the invention, two circuits (e.g., a glitch filter and a logical filter) are used to eliminate noise components. The first circuit eliminates a glitch noise by waiting until a predetermined time has elapsed from a time when information input from the external apparatus has changed, and latches the input information in response to the elapse of the predetermined time. The second circuit determines whether the latched information is the same as information latched the previous time. If so, the second circuit does not output the latched, thereby skipping the information not matching a predetermined protocol. If the information is not the same, then the second circuit does output the information, thereby processing the information matching with the predetermined protocol.

With specific reference to the claims, amended independent Claim 1 is directed to an interface apparatus to which information is input from an external apparatus according to a predetermined protocol which does not continuously transmit the same information, comprising a first circuit for waiting until a predetermined time has elapsed from a time when the information input from the external apparatus has changed, and latching the information input from the external apparatus in response to the elapse of the predetermined time, and a second circuit for determining whether the information latched by the first circuit is the same as information latched by the first circuit a previous time, wherein the second circuit does not output the latched information if it is determined that the information latched by the first circuit is the same as the information latched by the first circuit the previous time, thereby skipping the information not matching with the predetermined protocol, and wherein the second circuit does output the latched information if it is determined that the information latched by the first circuit is not the same as the information latched by the first circuit the previous time, thereby processing the information matching with the predetermined protocol.

Claim 5 is directed to a printer that substantially corresponds to Claim 1, while Claims 6 and 10 are method claims that substantially correspond to Claims 1 and 5, respectively.

The applied art, alone or in any permissible combination, is not seen to disclose or to suggest the features of the invention, and in particular, is not seen to disclose or to suggest at least the features of an interface apparatus to which information is input from an external apparatus according to a predetermined protocol which does not continuously transmit the same information having a second circuit for determining

whether information latched by a first circuit is the same as information latched by the first circuit a previous time, wherein the second circuit does not output the latched information if it is determined that the information latched by the first circuit is the same as the information latched by the first circuit the previous time, thereby skipping the information not matching with the predetermined protocol, and wherein the second circuit does output the latched information if it is determined that the information latched by the first circuit is not the same as the information latched by the first circuit the previous time, thereby processing the information matching with the predetermined protocol.

Wakasugi is seen to disclose that an internal strobe signal is asserted after a predetermined time has passed. See Wakasugi, Column 10, lines 45 to 49. More specifically, after a change in input data, Wakasugi waits until the data is no longer changing to shift to a “settling state”, and then starts a counter for counting a predetermined time. If the counter reaches a predetermined value without any further changes in the input data, the internal strobe signal is asserted to latch the data. See Wakasugi, Column 10, line 61 to Column 11, line 12. Thus, at best, this may be seen to correspond to starting a timer after a change in input data, and waiting until a predetermined time has elapsed before latching input data.

However, Wakasugi is not seen to teach the second circuit of the invention. Wakasugi discloses that, to eliminate a spike noise that accidentally occurs, if compared data are different from each other (if the spike noise occurs), it is controlled not to obtain the relevant data. On the other hand, according to the present invention, in consideration of the feature of the protocol that the same information does not continue, the information is not output if the latched information and the previous information are the same as a result

of comparison. This is because, if the same information continues, it is possible to judge that the information to be handled does not match the protocol. However, in Wakasugi, if the obtained data is the same as the previous data, a spike noise does not occur, whereby the data obtaining is performed. Such a control in Wakasugi is completely different from that in the present invention. Namely, Wakasugi merely eliminates the spike noise, but does not essentially judge whether or not the information matches the protocol. Therefore, Wakasugi does not teach the features of the claimed second circuit.

Motoyama also does not disclose or suggest the operation of the second circuit of the present invention. More specifically, in Motoyama, it is judged whether or not a protocol identifier exists, and, it is then judged, if the protocol identifier exists, whether or not an actual format of subsequent data is correct based on format data corresponding to the relevant protocol identifier. Here, in Motoyama, if the format data matches the subsequent data, it is judged that the data matches a protocol. On the other hand, according to the present invention, if the information latched previously is not the same as the information latched this time, it is judged that the information latched this time matches the protocol. As just described, it is apparent that controlling of Motoyama is quite different from that of the present invention.

In view of the foregoing amendments and remarks, independent Claims 1, 5, 6, and 10, as well as the claims dependent therefrom, are believed to be allowable.

No other matters having been raised, the entire application is believed to be in condition for allowance and such action is respectfully requested at the Examiner's earliest convenience.

Applicants' undersigned attorney may be reached in our Costa Mesa,
California office at (714) 540-8700. All correspondence should continue to be directed to
our below-listed address.

Respectfully submitted,

/Edward Kmett/

Edward A. Kmett
Attorney for Applicants
Registration No.: 42,746

FITZPATRICK, CELLA, HARPER & SCINTO
30 Rockefeller Plaza
New York, New York 10112-3800
Facsimile: (212) 218-2200

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